## Kato et al. [54] OXYGEN SENSOR WITH HEATER [75] Inventors: Nobuhide Kato, Ama; Takao Murase, Konan, both of Japan [73] Assignee: NGK Insulators, Ltd., Japan [21] Appl. No.: 604,973 [22] Filed: Apr. 27, 1984 [30] Foreign Application Priority Data May 9, 1983 [JP] Japan ..... 58-68661[U] May 9, 1983 [JP] Japan ..... 58-68662[U] May 9, 1983 [JP] Japan ..... 58-68666[U] May 9, 1983 [JP] Japan ..... 58-68667[U] Int. Cl.<sup>4</sup> ...... G01N 27/58 209/428 [58] Field of Search ...... 204/13, 421, 424-429 [56] References Cited U.S. PATENT DOCUMENTS 3,654,112 4/1972 Beekman's et al. ..... 204/427 4,107,019 8/1978 Takao et al. ...... 204/425 4,129,491 12/1978 Obiaya ...... 204/428

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## [57] ABSTRACT

An oxygen sensor having a bar-shaped heater inserted in an elongate bore formed in a tubular solid electrolyte body which has porous platinum electrodes on its inner and outer surfaces and which is supported by a housing such that its closed end portion is exposed to exhaust gas and such that the elongate bore is gas-tight with respect to the exhaust gas. The bar-shaped heater comprises a heating resistor having a positive temperature coefficient, and a ceramic boyd carrying the heating resistor so as to embed the latter.

15 Claims, 14 Drawing Figures

